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Forestry Canada - Maritimes Region

TECHNICAL NOTE

PLANTATION PEST ASSESSMENT SURVEYS IN NOVA SCOTIA

IN 1989

Multi-agency plantation pest assessment surveys have been carried out in Nova Scotia since 1987. The objective of the assessments is to detect pest problems and to assess the level of damage. Continued increase in wood demand has led to an increase in the number of natural stands harvested, while a commitment to reforestation of these harvested areas has led to an increase in the number of plantations. Tree growth and development is threatened by insects and diseases, which can cause growth loss. Regular plantation pest assessments provide information helpful to forest managers in protecting their investments.

The large and ever-increasing number of plantations has necessitated the involvement of a number of organizations in the plantation assessments. In 1989, participating organizations were:

Nova Scotia Dept. of Lands and Forests (NSLF),
Scott Worldwide Ltd. (SCOTT),
STORA Forest Industries (STORA).

The Forest Insect and Disease Survey unit of Forestry Canada - Maritimes Region (FIDS) provided planning, training, co-ordination, identification services, analysis, and summary.

NURSERIES ☐
PLANTATIONS ☐
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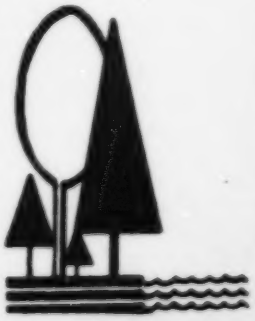
INSECTS AND DISEASES ■



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Assessments included detailed examination of 50 trees in each of the plantations assessed. Trees were selected in subplots of five trees each along a pre-determined line of travel through the plantation. The distance between subplots varied according to the size of the plantation to ensure good coverage and an adequate representation of conditions. Pest conditions encountered between subplots or off the line of travel were noted but not included in the calculations.

A total of 2 745 trees were assessed by NSLF, STORA and FIDS in Nova Scotia in 1989, 92% of which were reported as healthy. However, moderate or severe damage was found on some of the trees in 27 of the 57 (47%) plantations surveyed.

Scott Worldwide Inc. employed a different method of plantation pest assessment in a pilot project using hand-held data loggers to collect information. Over 17 700 trees were assessed in 614 plantations established between 1966 and 1981. Although the results are not comparable in all respects with data collected by other organizations, the objectives of pest detection and identification of plantations where pest control measures could be helpful, were met.

Total number of plantations surveyed in Nova Scotia in 1989 was 671, a vast increase over last year. Of these, 329 were spruce, 327 were pine and 15 were of other species.

The results of the survey are presented here in a series of tables, organized to show the various conditions in the seven NSLF resource management regions of Nova Scotia.

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Forest Insect and Disease Survey
Forestry Canada - Maritimes Region

April 1990

Table 1. Summary of plantation assessments by tree species and organization conducting field work in the various resource management regions in Nova Scotia in 1989.

Region	Tree species	Total plantations assessed	Organization			
			Scott	NSLF	STORA	FORCAN
Cape Breton	Black spruce	5	-	-	5	-
	Red spruce	2	-	-	2	-
	White spruce	1	-	-	-	1
	Mixed spruce	1	-	-	1	-
Total for Region		9	0	0	8	1
Eastern	Jack pine	21	21	-	-	-
	Red pine	93	92	-	-	1
	White pine	28	28	-	-	-
	Black spruce	29	20	2	6	1
	Norway spruce	22	22	-	-	-
	Red spruce	5	3	-	2	-
	White spruce	59	58	1	-	-
	Mixed spruce	3	-	-	3	-
	Mixed species	1	-	-	1	-
Total for Region		261	244	3	12	2
N. Central	Jack pine	39	39	-	-	-
	Red pine	59	59	-	-	-
	White pine	4	4	-	-	-
	Black spruce	60	58	1	-	1
	Norway spruce	18	18	-	-	-
	Red spruce	39	38	1	-	-
	White spruce	32	32	-	-	-
	Mixed spruce	1	-	1	-	-
	Larch	4	4	-	-	-
Total for Region		256	252	3	0	1
S. Central	Jack pine	22	21	-	-	1
	Red pine	46	44	1	-	1
	White pine	5	4	1	-	-
	Black spruce	12	11	1	-	-
	Norway spruce	14	13	-	-	1
	Red spruce	3	3	-	-	-
	White spruce	12	11	1	-	-
	Larch	11	11	-	-	-
Total for Region		125	118	4	0	3
S. Shore	Red pine	3	-	3	-	-
	Mixed pine	1	-	1	-	-
	Norway spruce	2	-	2	-	-
Total for Region		6	0	6	0	0
Valley	Jack pine	1	-	1	-	-
	Black spruce	1	-	1	-	-
	Red spruce	5	-	5	-	-
Total for Region		7	0	7	0	0
Western	Red pine	5	-	5	-	-
	Red spruce	3	-	3	-	-
Total for Region		8	0	8	0	0
Total for Nova Scotia		671	614	30	20	7

Table 2. Condition of pine and spruce trees by tree part in plantations

Region	Total no. of trees	NEEDLES Condition categories (%)					BUDS Condition categories (%)					SHOOTS Condition categories (%)				
		Healthy	Trace	Light	Mod.	Sev.	Healthy	Trace	Light	Mod.	Sev.	Healthy	Trace	Light	Mod.	Sev.
Pine																
E	50	0.0	16.0	84.0	0.0	0.0	94.0	6.0	0.0	0.0	0.0	48.0	50.0	2.0	0.0	0.0
SC	131	8.4	74.8	16.8	0.0	0.0	93.9	6.1	0.0	0.0	0.0	90.1	4.6	5.3	0.0	0.0
SS	200	97.5	1.5	0.0	0.0	1.0	60.5	27.5	10.0	2.0	0.0	100.0	0.0	0.0	0.0	0.0
V	48	97.9	0.0	0.0	2.1	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
W	247	93.5	4.5	0.0	0.4	1.6	93.5	5.3	1.2	0.0	0.0	99.6	0.4	0.0	0.0	0.0
PROVINCIAL AVERAGE		71.6	17.8	9.5	0.3	0.9	84.3	11.7	3.4	0.6	0.0	94.1	6.7	1.2	0.0	0.0
Spruce																
CS	444	75.0	18.5	5.4	1.1	0.0	92.8	7.0	0.2	0.0	0.0	80.9	15.1	3.8	0.2	0.0
E	736	88.7	9.0	1.5	0.4	0.4	97.1	2.3	0.4	0.0	0.1	92.1	6.8	0.5	0.5	0.0
HC	200	34.5	31.0	13.0	13.0	8.5	76.5	22.5	1.0	0.0	0.0	93.0	6.0	1.0	0.0	0.0
SC	148	62.2	36.5	1.4	0.0	0.0	65.5	33.8	0.7	0.0	0.0	80.4	14.9	2.7	2.0	0.0
S	100	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
V	295	92.9	4.7	0.0	1.0	1.4	99.3	0.7	0.0	0.0	0.0	90.5	9.2	0.3	0.0	0.0
W	146	97.9	0.7	0.7	0.7	0.0	96.6	2.1	1.4	0.0	0.0	94.5	4.1	1.4	0.0	0.0
PROVINCIAL AVERAGE		80.4	13.5	3.1	1.8	1.2	93.4	7.2	1.4	0.0	0.0	89.3	8.9	1.5	0.4	0.0

sessed in Nova Scotia in 1989.

BRANCHES					STEMS					LEADERS			ROOTS	
Condition categories (%)					Condition categories (%)					Condition categories (%)			Condition categories	
Healthy	Trace	Light	Mod.	Sev.	Healthy	Trace	Light	Mod.	Sev.	Healthy	Damaged	Dead	Healthy	Damaged
4.0	94.0	2.0	0.0	0.0	98.0	2.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0
52.7	19.8	19.8	6.9	0.8	79.8	5.4	1.6	10.1	3.1	96.9	3.1	0.0	100.0	0.0
89.5	4.0	3.0	1.0	2.5	98.0	1.0	0.0	0.0	1.0	99.0	1.0	0.0	100.0	0.0
100.0	0.0	0.0	0.0	0.0	95.8	9.3	0.0	4.9	0.0	98.4	1.6	0.0	100.0	0.0
83.4	10.5	0.0	4.5	1.6	85.8	9.3	0.0	4.9	0.0	98.4	1.6	0.0	100.0	0.0
74.6	15.8	4.9	3.3	1.5	89.9	5.8	0.4	3.7	0.9	97.6	2.4	0.0	100.0	0.0
80.9	15.1	3.8	0.2	0.0	95.7	2.0	1.4	0.7	0.2	95.7	4.3	0.0	98.9	1.1
90.1	2.9	1.6	0.0	0.0	90.8	4.5	1.9	2.4	0.4	95.1	4.1	0.8	99.2	0.8
87.5	11.5	1.0	0.0	0.0	98.5	1.0	0.0	0.5	0.0	95.0	2.5	2.5	99.0	1.0
81.8	18.2	0.0	0.0	0.0	95.9	4.1	0.0	0.0	0.0	98.0	1.4	0.7	100.0	0.0
94.0	0.0	1.0	5.0	0.0	99.0	0.0	0.0	1.0	0.0	89.0	11.0	0.0	100.0	0.0
99.3	0.7	0.0	0.0	0.0	98.3	1.4	0.3	0.0	0.0	98.0	2.0	0.0	98.6	1.4
93.8	3.4	1.4	0.7	0.7	84.2	9.6	3.4	2.1	0.7	91.1	8.9	0.0	97.9	2.1
92.2	5.5	1.5	0.6	0.2	94.0	3.3	1.3	1.3	0.2	95.3	4.2	0.6	99.0	1.0

Table 3. The condition of trees in plantations in New Brunswick and Nova Scotia in 1989

Province	Species	Tree Condition (%) Healthy	Fair	Poor	Dead
N.B.	Pine	93.3	4.3	1.7	0.7
	Spruce	90.9	6.2	1.1	1.8
	Other	85.9	10.2	3.2	0.7
	Average	90.9	6.9	2.0	1.1
N.S.*	Pine	88.9	5.7	2.0	3.4
	Spruce	92.7	4.4	1.4	1.5
	Other	84.0	6.0	10.0	0.0
	Average	91.6	4.8	1.7	1.9

*Does not include assessments conducted by Scott Worldwide Inc.

Table 4. Plantations with incidence of moderate or severe damage in the Maritimes in 1989

Province	Species	Number of plantations Assessed	With damage Mod.	Sev.
N.B.	Pine	69	18	9
	Spruce	187	33	75
	Other	18	5	9
	Total	274	56	93
N.S.*	Pine	14	6	4
	Spruce	42	10	7
	Other	1	0	0
	Total	57	16	11

*Does not include assessments conducted by Scott Worldwide Inc.

Table 5. Problems observed at the severe or moderate level during plantation pest assessment surveys in Nova Scotia in 1989.

Problem	Number of plantations by region													
	Pine							Spruce						
	W	SS	V	NC	SC	E	CB	W	SS	V	NC	SC	E	CB
Animal	2	-	-	-	2	-	-	-	-	-	-	2	2	-
Armillaria root rot	-	-	-	-	-	1	-	-	-	-	-	-	6	2
Aphid	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Competition - herbaceous	-	-	-	-	-	-	-	-	-	1	-	-	1	-
Eastern spruce gall adelgid	-	-	-	-	-	-	-	-	-	-	-	1	-	-
European pine shoot moth	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Frost	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Mechanical	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Needle rust	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Northern pitch twig moth	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Planting	-	-	-	-	-	-	-	-	-	1	-	-	4	1
Snow	-	-	1	-	2	-	-	-	-	-	-	-	-	1
Spruce bud midge	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Spider mite	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather	-	-	-	-	-	-	-	1	-	-	-	-	-	-
White pine weevil	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Wind	-	-	-	-	-	-	-	-	-	-	-	-	2	1
Winter drying	-	-	-	-	-	-	-	1	-	-	-	-	1	-
Miscellaneous	2	-	-	-	1	-	-	-	-	2	-	2	9	1

W=western; SS=South Shore; V=Valley; NC=North Central; SC=South Central; E=Eastern; CB=Cape Breton.

Table 6. Problems observed during plantation pest assessment surveys by Scott Worldwide Inc. in Nova Scotia in 1989.

	Number of plantations							
	Pine			Spruce				Larch
Problem	jP	rP	wP	bS	nS	rS	wS	tL
Armillaria root rot	1	4	7	1	1	-	3	2
European pine shoot moth	8	29	2	-	-	-	-	-
Frost	-	1	1	-	-	-	-	-
Shoot moth	-	-	-	-	1	-	1	-
Sirococcus shoot blight	-	16	-	-	-	-	-	-
Weevil	11	18	5	-	4	-	-	-
Other	73	127	35	16	21	6	8	14
Unknown	28	37	9	20	2	21	3	4

jP= jack pine; rP= red pine; wP= white pine; bS= black spruce; nS= norway spruce; rS= red spruce; wS= white spruce; tL= tamarack.

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